BS

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/921,464 | 08/03/2001 | Bradford A. Ritter | 10015867-1 | 7032 |

7590 11/02/2004

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

| EXAMINER | |
|---|---|
| YANG, RYAN R | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2672 | 13 |

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

RECEIVED
NOV 0 2 2004
Technology Center 2600

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450
www.uspto.gov

**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Application Number: 09/921,464
Filing Date: August 03, 2001
Appellant(s): RITTER, BRADFORD A.

Jody C. Bishop
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 8/13/2004.

***(1) Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

***(2) Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

***(3) Status of Claims***

The statement of the status of the claims contained in the brief is correct.

***(4) Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

***(5) Summary of Invention***

The summary of invention contained in the brief is correct.

***(6) Issues***

The appellant's statement of the issues in the brief is correct.

***(7) Grouping of Claims***

Appellant's brief includes a statement that claims 1-31 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

***(8) Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

***(9) Prior Art of Record***

| | | |
|---|---|---|
| 6,232,981 | Gossett | 5-2001 |
| 4,601,055 | Kent | 7-1986 |

Li-Yi Wei & Marc Levoy "Fast Texture Synthesis using Tree-structured Vector Quantization", SIGGRAPH 2000 Conference Proceedings pg. 479-488

***(10) Grounds of Rejection***

The following ground(s) of rejection are applicable to the appealed claims:

10.1 Claims 1-10, 14, 17-20, 23, 25 and 27-31 are rejected under 35 U.S.C. 102(a) as being anticipated by Wei et al. (SIGGRAPH 2000 Conference Proceedings pg. 479-488).

As per claim 1, Wei et al, hereinafter Wei, discloses a method for synthesizing a texture of a desired size from a sample texture, said method comprising:

generating a matrix of said desired size (G*s* where G*s* is a Gaussian matrix (page 483, Section 2.6); G*s* is built from *Is* which are a plurality of texture samples with a size (page 481 Section 2));

providing values to said matrix, wherein said values comprise random values (G*s* is a Gaussian matrix, therefore the elements of the matrix are random values) and wherein at least a portion of said values represents a desired structure according to which graphical features of a synthesized texture are to substantially conform (*Is* which are a plurality of texture samples with a size (page 481, Section 2), since Gs is built from *Is*, it is substantially conformed to *Is*); and

executing a texture synthesis process that utilizes said matrix to generate a synthesized texture of said desired size having graphical features arranged therein substantially in conformance with said desired structure (**function** *Is* is a texture synthesis process, where Gs is the desired size (page 483, section 2.6)).

10.2 As per claim 2, Wei demonstrated all the elements as applied to the rejection of independent claim 1, supra, and further discloses providing comprises:

providing constant values to said matrix that represent said desired structure (*Gs* ← BuildPyramid(*Is*) where *Is* are a plurality of constants, since *Is* contain both random values and texture values after being forced to look like *Ia*).

10.3 As per claim 3, Wei demonstrated all the elements as applied to the rejection of independent claim 1, supra, and further discloses providing comprises:

providing constant values to said matrix that are arranged therein to represent said desired structure (*Gs* ← BuildPyramid(*Is*) where *Is* are a plurality of constants, since *Is* contain both random values and texture values after being forced to look like *Ia*).

10.4 As per claim 4, Wei demonstrated all the elements as applied to the rejection of independent claim 1, supra, and further discloses providing comprises:

populating said matrix with values from a pre-existing file (*Ia* is the pre-existing texture sample from a file).

10.5 As per claim 5, Wei demonstrated all the elements as applied to the rejection of dependent claim 4, supra, and further discloses:

randomizing said values from said pre-existing file (*Gs* ← BuildPyramid(*Is*) is a randomizing process).

10.6 As per claim 6, Wei demonstrated all the elements as applied to the rejection of dependent claim 5, supra, and further discloses randomizing further comprises:

randomizing said values from said pre-existing file to a user-specified degree (*Gs(L)* by setting *L* the resolution level, the degree of randomization can be set).

10.7 As per claim 7, Wei demonstrated all the elements as applied to the rejection of dependent claim 4, supra, and further discloses values from said preexisting file are nearly the desired result but are not tileable (since the input textual data is not yet randomized, it is not tileable).

10.8 As per claim 8, Wei demonstrated all the elements as applied to the rejection of dependent claim 4, supra, and further discloses values from said pre-existing file include said at least a portion of values that represent said desired structure, but wherein said matrix having values from said pre-existing file is not readily tileable (since the input textual data is not yet randomized, it is not tileable).

10.9 As per claim 9, Wei demonstrated all the elements as applied to the rejection of independent claim 1, supra, and further discloses executing said texture synthesis process further comprises:

(a) selecting a value from said matrix (selecting (*Xs, Ys*), page 483, **function** *Is*, line 5);

(b) determining a first neighborhood of the selected value from said matrix (*Ns* ← BuildNeighborhood(*Gs,L, Xs, Ys*), page 483, **function** C, line 1); and

(c) comparing said first neighborhood to neighborhoods of said sample texture to determine an optimal value of said sample texture (**function** C, line 5-6, page 483).

10.10 As per claim 10, Wei demonstrated all the elements as applied to the rejection of dependent claim 9, supra, and further discloses:

(d) repeating (a)-(c) for each value of said matrix (**function** Is, line 5, page 483).

10.11 As per claim 14, Wei demonstrated all the elements as applied to the rejection of independent claim 1, supra, and further discloses said providing comprises providing pixel values to said matrix (*Gs* ← BuildPyramid(*Is*) where *Is* are a plurality of constants).

10.12 As per claim 17, Wei discloses a system for generating a synthesized texture from a sample texture, said system comprising:

a first data structure defining said sample texture of a first plurality of values (G*s* where G*s* is a Gaussian matrix, page 483 Section 2.6; G*s* is built from *Is* which are a plurality of texture samples with a size, page 481 Section 2);

a second data structure defining a texture of a second plurality of values, wherein at least a portion of said values of said second data structure are random (G*s* is a Gaussian matrix, therefore the elements are random values) and wherein at least a portion of said values of said second data structure represent a desired structure according to which graphical features are to substantially conform (*Is* which are a plurality of texture samples with a size, page 481 Section 2, since Gs is built from Is, it is substantially conformed to Is); and

a texture synthesis algorithm, said texture synthesis algorithm being operable to utilize at least said first data structure and said second data structure to generate a

synthesized texture having graphical features arranged therein in substantial conformance to said desired structure (**function** *Is* is a texture synthesis process, where Gs is the desired size, page 483 section 2.6).

10.13 As per claim 18, Wei demonstrated all the elements as applied to the rejection of independent claim 17, supra, and further discloses said first data structure is of a first size and wherein said second data structure is of a second size (*Is* is a first size and Gs is the second size, page 483 section 2.6).

10.14 As per claim 19, Wei demonstrated all the elements as applied to the rejection of independent claim 17, supra, and further discloses at least a portion of said values of said second data structure comprises:

constant values arranged in said second data structure to represent said desired structure (*Gs* ← BuildPyramid(*Is*) where *Is* are a plurality of constants, since *Is* contain both random values and texture values after being forced to look like *Ia*).

10.15 As per claim 20, Wei demonstrated all the elements as applied to the rejection of independent claim 17, supra, and further discloses said second data structure is populated with values from a pre-existing file comprising said at least a portion of said values that identify said desired structure (*Ia* is the pre-existing texture sample from a file that identify said desired structure).

10.16 As per claim 23, Wei demonstrated all the elements as applied to the rejection of independent claim 17, supra, and further discloses said texture synthesis algorithm is operable to transform said second data structure into said synthesized texture (*Gs* ←

BuildPyramid(*Is*) is a transforming process, since *Is* contain both random values and texture values after being forced to look like *Ia*).

10.17 As per claim 25, Wei demonstrated all the elements as applied to the rejection of independent claim 17, supra, and further discloses wherein said texture synthesis algorithm is further operable to

select a value from said second data structure (selecting (*Xs, Ys*), page 483, **function** *Is*, line 5),

determine a first neighborhood of the selected value from said second data structure (*Ns* ← BuildNeighborhood(*Gs,L, Xs,Ys*), page 483, **function** C, line 1),

compare said first neighborhood to neighborhoods of said first data structure to determine an optimal value of said first data structure, and assign said optimal value to the selected value of said second data structure (**function** C, line 5-7, page 483).

10.18 As per claim 27, Wei discloses a system for synthesizing a texture of a desired size from a sample texture, said system comprising:

code for generating a matrix of said desired size (*Gs* where *Gs* is a Gaussian matrix, page 483 Section 2.6; *Gs* is built from *Is* which are a plurality of texture samples with a size, page 481 Section 2);

code for initializing said matrix with a plurality of values, wherein at least a portion of said values are random (*Gs* is a Gaussian matrix, therefore the elements are random values) and wherein at least a portion of said values represent a desired structure according to which graphical features are to be arranged (*Is* which are a plurality of

texture samples with a size, page 481 Section 2, since Gs is built from Is, it is substantially conformed to Is); and

code for generating a synthesized texture of said desired size having graphical features arranged therein according to said desired structure (**function** *Is* is a texture synthesis process, where Gs is the desired size, page 483 section 2.6).

10.19 As per claim 28, Wei demonstrated all the elements as applied to the rejection of independent claim 27, supra, and further discloses initializing said matrix further comprises:

code for providing constant values to said matrix arranged therein to identify said desired structure (*Gs* ← BuildPyramid(*Is*) where *Is* are a plurality of constants, since *Is* contain both random values and texture values after being forced to look like *Ia*).

10.20 As per claim 29, Wei demonstrated all the elements as applied to the rejection of independent claim 27, supra, and further discloses initializing said matrix further comprises:

code for populating said matrix with values from a pre-existing file (*Ia* is the pre-existing texture sample from a file).

10.21 As per claim 30, Wei demonstrated all the elements as applied to the rejection of independent claim 27, supra, and further discloses generating comprises:

code for transforming at least a portion of said values of said matrix such that said matrix defines said synthesized texture (*Gs* ← BuildPyramid(*Is*) is a transforming process).

10.22 As per claim 31, Wei demonstrated all the elements as applied to the rejection of independent claim 27, supra, and further discloses generating further comprises:

code for determining a first neighborhood of a selected value from said matrix (selecting (*Xs, Ys*), page 483, **function** *Is*, line 5);

code for comparing said first neighborhood to neighborhoods of said sample texture to determine an optimal value of said sample texture (*Ns* ← BuildNeighborhood(*Gs,L, Xs,Ys*), page 483, **function** C, line 1); and

code for assigning said optimal value of said sample texture to the selected value of said matrix (**function** C, line 5-7, page 483).

10.23 Claims 11-12 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wei et al. (SIGGRAPH 2000 Conference Proceedings pg. 479-488).

As per claim 11, Wei demonstrated all the elements as applied to the rejection of independent claim 1, supra.

Wei discloses a method of synthesizing an image. It is noted that Wei does not explicitly disclose said sample texture comprises a parametric texture map (PTM) texture, however, since PTM is a notoriously well known sub-class of texture map, it would have been obvious to one of ordinary skill in the art at the time the invention was made to extend the method to parametric texture map in order to synthesize a well known sub-class of texture map.

10.24 As per claim 12, Wei demonstrated all the elements as applied to the rejection of dependent claim 11, supra, and further discloses providing texture values to said matrix (*Gs* ← BuildPyramid(*Is*) where *Is* are a plurality of constants).

10.25 As per claim 21, Wei demonstrated all the elements as applied to the rejection of independent claim 17, supra.

Wei discloses a method of synthesizing an image. It is noted that Wei does not explicitly disclose said sample texture comprises a parametric texture map (PTM) texture, however, since PTM is a notoriously well known class of texture map, it would have been obvious to one of ordinary skill in the art at the time the invention was made to extend the method to parametric texture map in order to synthesize a well known sub-class of texture map.

10.26 As per claim 22, Wei demonstrated all the elements as applied to the rejection of dependent claim 21, supra, and further discloses said first plurality of values comprise texel values (*Gs* ← BuildPyramid(*Is*) where *Is* are a plurality of constants).

10.27 Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wei et al. as applied to claim 1 above, and further in view of Gossett.

10.28 As per claim 13, Wei demonstrated all the elements as applied to the rejection of independent claim 1, supra.

Wei discloses a method of synthesize an image. It is noted that Wei does not explicitly disclose sample texture comprises a texture of a format selected from the group consisting of red-green-blue (RGB), red-green-blue-alpha (RGBA), color index, luminance, and luminance alpha, however, this is known in the art as taught by Gossett. Gossett discloses a method of texture synthesis using red-green-blue (RGB), red-green-blue-alpha (RGBA), luminance, and luminance alpha (column 5, Table 1).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Gossett into Wei because Wei discloses a method of synthesizing image and Gossett discloses the texture format can be described in said format in order to more rigorously describing a texture.

10.29 Claims 15, 16, 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wei et al. as applied to claim 1 above, and further in view of Kent (4,601,055).

10.30 As per claim 15, Wei demonstrated all the elements as applied to the rejection of independent claim 1, supra.

Wei discloses a method of synthesize an image. It is noted that Wei does not explicitly disclose re-sizing said synthesized texture, however, this is known in the art as taught by Kent. Kent discloses a method of synthesizing image in which the synthesized image can be re-sized ("For objects of large area, all that would need to be done would be to continue constructing pyramid levels until the desired pixel size was reached, column 19, line 61-63).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kent into Wei because Wei discloses a method of synthesizing image and Kent discloses the synthesized image can be re-sized in order to achieve maximum contrast with the background.

10.31 As per claim 16, Wei demonstrated all the elements as applied to the rejection of independent claim 1, supra.

Wei discloses a method of synthesize an image. It is noted that Wei does not explicitly disclose said desired size is not a power of 2, further comprising re-sizing said synthesized texture to a size that is a power of 2, however, this is known in the art as taught by Kent. Kent discloses a method of synthesizing image in which the synthesized image is can be re-sized into a power of 2 ("The method is to construct a pyramid of images Io, Ii, ... $I_k$. Here $_k$ is the level at which single pixels correspond to regions in the original image of about the right sizes (i.e., within the nearest power of two), column 19, line 64-67).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kent into Wei because Wei discloses a method of synthesizing image and Kent discloses the synthesized image can be re-sized in order to achieve maximum contrast with the background.

10.32 As per claim 24, Wei demonstrated all the elements as applied to the rejection of dependent claim 23, supra.

Wei discloses a method of synthesize an image. It is noted that Wei does not explicitly disclose said second data structure has a size that is not a power of 2, and wherein said texture synthesis algorithm is further operable to re-size said synthesized texture to a size that is a power of 2, however, this is known in the art as taught by Kent. Kent discloses a method of synthesizing image in which the synthesized image can be re-sized in a power of 2 ("The method is to construct a pyramid of images Io, Ii, ... $I_k$. Here $_k$ is the level at which single pixels correspond to regions in the original image of about the right sizes (i.e., within the nearest power of two), column 19, line 64-67).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kent into Wei because Wei discloses a method of synthesizing image and Kent discloses the synthesized image can be re-sized into within nearest power of 2 in order to achieve maximum contrast with the background.

10.33 As per claim 26, Wei demonstrated all the elements as applied to the rejection of independent claim 17, supra.

Wei discloses a method of synthesize an image. It is noted that Wei does not explicitly disclose the step of re-sizing said synthesized texture, however, this is known in the art as taught by Kent. Kent discloses a method of synthesizing image in which the synthesized image is can be re-sized ("For objects of large area, all that would need to be done would be to continue constructing pyramid levels until the desired pixel size was reached, column 19, line 61-63).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kent into Wei because Wei discloses a method of synthesizing image and Kent discloses the synthesized image can be re-sized into within nearest power of 2 in order to achieve maximum contrast with the background.

***Response to Arguments***

11. **I. Rejections under 35 U.S.C. 102(a) over Wei**

As per independent claims 1, 17 and 27, applicant alleges Wei does not disclose "providing values to said matrix, wherein said values comprise random values and wherein at least a portion of said values represents a desired structure according to which graphical features of a synthesized texture are to substantially conform". In reply, examiner notes Gs is a Gaussian matrix, therefore the elements of the matrix are random values (page 481 section 2), and since Gs is built from *Is*, it is substantially conformed to a desired structure (see 2.3). Since *Is* is forced to look like a texture sample *Ia* (see page 481, section 2.1) and Gs is built from *Is*, Gs contains both random values and a desired structure.

Applicant alleges the white random noise matrix *Is* that is processed in the above manner to look like *Ia* does not include any values therein that represent a desired structure according to which graphical features of the synthesized texture are to substantially conform. In reply, examiner considers since *Ia* is a texture sample *Ia* has the desired structure and since *Is* is forced to look like *Ia,* it has both desired structure and randomness.

Applicant further tries to distinguish the invention from the Wei teaching. However, examiner does not think the claim limitations substantiated such arguments.

As per claims 2-10, 14, 18-20, 23, 25 and 28-31, since they are dependent on rejected independent claims, they rejected for the same reasons as rejected independent claims.

**II. Rejection Under 35 U.S.C. 103 (a)**

As per claims 11, 12, 21 and 22, applicant alleges Wei does not disclose the limitation "wherein said sample texture comprises a parametric texture map (PTM) texture". In reply, examiner notes that PTM is a subclass of texture map in which PTM has extra parameter describing the incident light direction. Examiner considers it is within the ability of one of ordinary skill in the art at the time the invention was made to extend the method to parametric texture map in order to synthesize a well known sub-class of texture map because the variable describing the incident light direction is just one extra variable, like any other variables, in describing a texture map.

As per claim 13, applicant alleges Wei does not disclose the limitation "providing values to said matrix, wherein said values comprise random values and wherein at least a portion of said values represents a desired structure according to which graphical features of a synthesized texture are to substantially conform". In reply, examiner notes *Gs* is a Gaussian matrix, therefore the elements are random values (page 481 section 2), and since Gs is built from *Is*, it is substantially conformed to a desired structure (see 2.3).

In addition, applicant alleges the motivation to combine is improper. In reply, examiner considers since Gossett uses more parameters to describe a texture, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include Gossett's method of generating texture map in order to more rigorously describing a texture.

As per claim 15, applicant alleges lack of motivation to combine. In reply, examiner considers to achieve maximum contrast with the background is the motivation to combine.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Ryan Yang
November 1, 2004

Conferees:

Bipin H Shalwala _____

Michael Razavi MR _____

SHALWALA
EXAMINER
2600